

§ 87.135

47 CFR Ch. I (10–1–15 Edition)

<sup>7</sup>For single-sideband transmitters operating in the frequency bands 1605–4000 kHz and 4–29.7 MHz which are allocated exclusively to the Aeronautical Mobile (R) Service, the tolerance is: Aeronautical stations, 10 Hz; aircraft stations, 20 Hz.

<sup>8</sup>For single-sideband radiotelephone transmitters the tolerance is: In the bands 1605–4000 kHz and 4–29.7 MHz for peak envelope powers of 200 W or less and 500 W or less, respectively, 50 Hz; in the bands 1605–4000 kHz and 4–29.7 MHz for peak envelope powers above 200 W and 500 W, respectively, 20 Hz.

<sup>9</sup>Where specific frequencies are not assigned to radar stations, the bandwidth occupied by the emissions of such stations must be maintained within the band allocated to the service and the indicated tolerance does not apply.

<sup>10</sup>Until January 1, 1997, the maximum frequency tolerance for transmitters with 50 kHz channel spacing installed before January 2, 1985, is 50 parts in 10<sup>6</sup>.

<sup>11</sup>For purposes of certification, a tolerance of 160 Hz applies to the reference oscillator of the AES transmitter. This is a bench test.

<sup>12</sup>For emissions G1D and G7D, the tolerance is 2 parts per 10<sup>6</sup>.

<sup>13</sup>For emissions G1D and G7D, the tolerance is 5 parts per 10<sup>6</sup>.

(b) The power shown in paragraph (a) of this section is the peak envelope power for single-sideband transmitters and the mean power for all other transmitters.

(c) For single-sideband transmitters, the tolerance is:

(1) All aeronautical stations on land—10 Hz.

(2) All aircraft stations—20 Hz.

(d) For radar transmitters, except non-pulse signal radio altimeters, the frequency at which maximum emission occurs must be within the authorized frequency band and must not be closer than 1.5/T MHz to the upper and lower limits of the authorized bandwidth, where T is the pulse duration in microseconds.

(e) The Commission may authorize tolerances other than those specified in this section upon a satisfactory showing of need.

(f) The carrier frequency tolerance of all transmitters that operate in the 1435–1525 MHz or 2345–2395 MHz band is 0.002 percent. The carrier frequency tolerance of all transmitters that operate in the 5091–5150 MHz band is 0.005 percent.

(g) Any aeronautical enroute service transmitter operating in U.S. controlled airspace with 8.33 kHz channel spacing (except equipment being tested by avionics equipment manufacturers and flight test stations prior to delivery to their customers for use outside U.S. controlled airspace) must achieve

0.0005% frequency stability when operating in that mode.

[53 FR 28940, Aug. 1, 1988, as amended at 56 FR 38084, Aug. 12, 1991; 57 FR 45749, Oct. 5, 1992; 58 FR 31027, May 26, 1993; 63 FR 36607, July 7, 1998; 64 FR 27474, May 20, 1999; 66 FR 26799, May 15, 2001; 69 FR 32880, June 14, 2004; 76 FR 17350, Mar. 29, 2011; 78 FR 61205, Oct. 3, 2013; 80 FR 38909, July 7, 2015]

§ 87.135 Bandwidth of emission.

(a) Occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to 0.5 percent of the total mean power of a given emission.

(b) The authorized bandwidth is the maximum occupied bandwidth authorized to be used by a station.

(c) The necessary bandwidth for a given class of emission is the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions.

§ 87.137 Types of emission.

(a) The assignable emissions, corresponding emission designators and authorized bandwidths are as follows:

Class of emission	Emission designator	Authorized bandwidth (kilohertz)		
		Below 50 MHz	Above 50 MHz	Frequency deviation
A1A <sup>1</sup> .....	100HA1A	0.25		
A1N .....	300HA1N		0.75	
A2A .....	2K04A2A	2.74	50	
A2D .....	6K0A2D		50	
A2D <sup>5</sup> .....	13K0A2D		50	
A3E <sup>2</sup> .....	6K00A3E		50 <sup>3</sup>	
A3E .....	5K6A3E		8.33	
kHz <sup>17</sup>				
A3X <sup>4</sup> .....	3K20A3X		25	
A9W <sup>5</sup> .....	13K0A9W		25	
F1B <sup>1</sup> .....	1K70F1B	1.7		
F1B <sup>1</sup> .....	2K40F1B	2.5		
F1D <sup>18</sup> .....	1M30F1D		1300	312.5
				kHz
F2D .....	5M0F2D		( <sup>9</sup> )	
F3E <sup>6</sup> .....	16K0F3E		20	5
F3E <sup>7</sup> .....	36K0F3E		40	15
F7D <sup>8</sup> .....	5M0F7D		<sup>9</sup>	
F9D .....	5M0F9D		<sup>9</sup>	
G1D .....	16K0G1D		20 kHz	
G1D <sup>16</sup> .....	21K0G1D		25	
G1D .....	14K0G1D		25	
F9D .....	5M0F9D		<sup>9</sup>	
G1D .....	16K0G1D		20 kHz	
G3E <sup>6</sup> .....	16K0G3E		20	5
G7D .....	14K0G7D		25	
H2B <sup>10 11</sup> .....	2K80H2B	3.0		